WHAT IS CLAIMED IS:

1. A combined radiation and radiosensitizer delivery catheter for inhibiting hyperplasia, comprising:

a catheter body having a proximal end and a distal end;

an ionizing radiation source coupleable to the catheter body for applying a radiation dose to a body lumen; and

means coupleable to the catheter body or the radiation source for releasing a radiosensitizer to the body lumen.

2. A delivery catheter as in claim 1, wherein the ionizing radiation source is an x-ray tube.

3. A delivery catheter as in claim 1, wherein the ionizing radiation source is a radioisotope.

4. A delivery catheter as in claim 1, wherein the ionizing radiation source is a receptacle in the catheter body for receiving radioisotopic materials.

5. A delivery catheter as in claim 1, wherein the means comprises a source of at least one radiosensitizer selected from the group consisting of taxol, misonidazole, metronidazole, etanidazole, 5-fluorouracil, texaphyrin, C225, and cyclooxygenase-2 inhibitor.

6. A delivery catheter as in claim 1, wherein the means comprises a source of taxol incorporated in a solution with polyoxyethylated castor oil and dehydrated alcohol.

7. A delivery catheter as in claim 1, wherein the radiosensitizer is attached or encapsulated in a lipid or surfactant carrier.

8. A delivery catheter as in claim 1, wherein the means for releasing the radiosensitizer comprises a microporous balloon on the catheter body.

9. A delivery catheter as in claim 8, wherein the microporous balloon contains the radiosensitizer and the radiosensitizer is released from the microporous balloon by elution from pores.

10. A delivery catheter as in claim 9, wherein the microporous balloon is inflatable with the radiosensitizer.

11. A delivery catheter as in claim 1, wherein the means for releasing the radiosensitizer comprises a matrix formed over at least a portion of a balloon on the catheter body, wherein the radiosensitizer is in or beneath the matrix.

12. A delivery catheter as in claim 11, wherein the matrix comprises a rate controlling material, wherein the rate controlling material controls the rate at which the radiosensitizer is released from or through the matrix.

13. A delivery catheter as in claim 12, wherein the radiosensitizer is released from the matrix by diffusion through the matrix.

14. A delivery catheter as in claim 12, wherein the radiosensitizer is released from the matrix by degradation of the matrix.

15. A delivery catheter as in claim 12, wherein the rate controlling material is porous and the radiosensitizer is released from the material by elution from pores.

16. A delivery catheter as in claim 11, wherein the radiosensitizer is disposed on the balloon.

17. A delivery catheter as in claim 8 or 11, wherein the ionizing radiation source is positionable within the balloon.

18. A delivery catheter as in claim 1, wherein the ionizing radiation source is a radioisotopic balloon and the means for releasing the radiosensitizer comprises a matrix formed over at least a portion of the radioisotopic balloon, wherein the radiosensitizer is in or beneath the matrix.

19. A delivery catheter as in claim 8, 11, or 18, further comprising perfusion threading on an outer surface of the balloon.

20. A delivery catheter as in claim 19, wherein the threading has a spiral, helical, or angled pattern.

21. A delivery catheter as in claim 8, 11, or 18, wherein the catheter body has a perfusion lumen.

22. A combined radiation and radiosensitizer delivery catheter for inhibiting hyperplasia, comprising:

a catheter body having a proximal end, a distal end, and an infusion lumen for releasing a radiosensitizer;

a pair of axially spaced apart balloons on the catheter body; and

an ionizing radiation source coupleable to the catheter body for applying a radiation dose between the axially spaced apart balloons.

23. A delivery catheter as in claim 22, further comprising a source for releasing at least one radiosensitizer selected from the group consisting of taxol, misonidazole, metronidazole, etanidazole, 5-fluorouracil, texaphyrin, C225, and cyclooxygenase-2 inhibitor.

24. A method for inhibiting hyperplasia in a body lumen, said method comprising:

releasing a radiosensitizer at a target region within the body lumen; and

directing ionizing radiation at the target region, wherein the radiosensitizer and radiation combine to inhibit hyperplasia.

25. A method as in claim 24, further comprising inflating a balloon at the target region, where the radiosensitizer is released from the balloon.

26. A method as in claim 25, wherein the balloon is inflated with the radiosensitizer and the radiosensitizer is released from an interior of the balloon through pores.

27. A method as in claim 25, wherein the radiosensitizer is released from a surface of the balloon.

28. A method as in claim 27, wherein the radiosensitizer is released through a rate controlling matrix.

29. A method as in claim 24, further comprising isolating the target region, wherein the radiosensitizer is released into the isolated region.

30. A method as in claim 29, wherein isolating comprises inflating a pair of axially spaced apart balloons.

31. A method as in claim 29, wherein isolating comprises expanding a pair of axially spaced apart mechanical barriers.

32. A method as in claim 25, wherein the directing comprises positioning an ionizing radiation source within the balloon.

33. A method as in claim 29, wherein the directing comprises positioning an ionizing radiation source within the isolated target region.

34. A method as in claim 32 or 33, wherein the ionizing radiation source is an x-ray tube and positioning comprises energizing the x-ray tube and translating the x-ray tube to traverse the target region.

35. A method as in claim 32 or 33, wherein the ionizing radiation source is a radioisotope.

36. A method as in claim 32 or 33, wherein the ionizing radiation source is a receptacle in the catheter body and positioning comprises introducing a radioisotope into the receptacle.

37. A method as in claim 24, wherein the body lumen is a blood vessel and the target region is a region at risk of hyperplasia.

38. A method as in claim 24, wherein the directing comprises applying a total radiation dose in a range from about 4 Gy to 24 Gy.

39. A method as in claim 24, wherein the releasing a radiosensitizer and directing an ionizing radiation dose are carried out simultaneously.

40. A method as in claim 24, wherein the releasing a radiosensitizer and directing an ionizing radiation dose are carried out sequentially.

41. A kit comprising:

a catheter capable of applying a radiation dose and releasing a radiosensitizer in a body lumen; and

instructions to use the catheter according to any one of claims 24-40.

42. A kit as in claim 41, further comprising a source of radiosensitizer.